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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,089	08/26/2003	Samuel H. Gellman	09820.286	2777

25005 7590 10/28/2005

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EXAMINER	
KOSAR, ANDREW D	
ART UNIT	PAPER NUMBER
1654	

DATE MAILED: 10/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/648,089	GELLMAN ET AL.	
	Examiner	Art Unit	
	Andrew D. Kosar	1654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-6,8,9 and 11* is/are pending in the application.

4a) Of the above claim(s) *11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-6,8 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *20051020*.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-3, 7, 10 and 12-14 are cancelled.

Claims 4-6, 8, 9 and 11 are pending. Claim 11 stands withdrawn.

Response to Amendment / Arguments

Applicants arguments filed August 4, 2005 have been considered.

Applicant's amendments to the specification are acknowledged. The objection to the specification is withdrawn.

Applicant's arguments with regards to the claim objections have been considered, and the objection is withdrawn.

Applicant's arguments with regards to the utility rejection (35 USC §§ 101 and 112) have been fully considered but they are not found persuasive.

Applicant argues that the compounds have utility because they "have fewer degrees of freedom in solution compared to naturally-occurring polypeptides" and "will adopt a more limited number of conformations"(Remarks, page 21) and asserts that the specification (spanning page 19, line 19 to page 20, line 25) provides credible, specific, and practical utility. The citation, while providing general utility, does not provide a substantial, specific, and credible utility, as stated in the previous office action (and reiterated below).

With regards to Seebach, the article while being of a 'closely contemporaneous' date with the instant application, does not provide utility for Applicant's invention at the time of Applicant's filing. Further, the utility of Seebach is of a specific nature- their ability to mimic binding interactions of two proteins- γ-dipeptide of Seebach and their interaction with human

somatostatin receptors, unlike the general utility disclosed- useful probes for investigating the function of naturally-occurring proteins.

Applicant further argues that, "the Office has not established by way of scientific reasoning or examples why it doubts Applicants' asserted utility'. As set forth in the rejection (previously, and below) the examiner has set forth both examples and reasoning doubting Applicants' utility, as it is neither specific nor substantial, but rather a general utility.

Additionally, in arguing against the written description rejection that was set forth by the examiner, Applicant admits, "The presently compounds (*sic.*) have no corresponding biological function" (emphasis added, page 27, REMARKS), which is in direct contrast to the alleged utility derived from Seebach.

> 35 U.S.C. 101 reads as follows:
> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 4-6, 8 and 9 stand rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

The instant claims are asserted to be 'probes' (e.g., page 25, line 9+ "The invention thus enhances... providing a larger "toolbox" of probes to be used in investigating the function of naturally-occurring proteins."; page 24, line 27+ "The utility of the compounds for probing protein interactions is great because..."). In the instant case, the utility is a 'general utility' (*see MPEP § 2107.01(I)*, "[I]ndicating that a compound may be useful in treating unspecified disorders, or that the compound has "useful biological" properties, would not be sufficient to define a specific utility for the compound. Similarly, a claim to a polynucleotide whose use is disclosed simply as a "gene probe" or "chromosome marker" would not be considered to be

specific in the absence of a disclosure of a specific DNA target"; "A general statement of diagnostic utility, such as diagnosing an unspecified disease, would ordinarily be insufficient absent a disclosure of what condition can be diagnosed.").

Further, the MPEP states that the following categories are not substantial utilities: (A) Basic research such as studying the properties of the claimed product itself or the mechanisms in which the material is involved; (B) A method of treating an unspecified disease or condition; (C) A method of assaying for or identifying a material that itself has no specific and/or substantial utility; (D) A method of making a material that itself has no specific, substantial, and credible utility; and (E) A claim to an intermediate product for use in making a final product that has no specific, substantial and credible utility. MPEP § 2107.01(I). Further, with regards to research tools, the MPEP states, "An assessment that focuses on whether an invention is useful only in a research setting thus does not address whether the invention is in fact "useful" in a patent sense. Instead, Office personnel must distinguish between inventions that have a specifically identified substantial utility and inventions whose asserted utility requires further research to identify or reasonably confirm. Labels such as "research tool," "intermediate" or "for research purposes" are not helpful in determining if an applicant has identified a specific and substantial utility for the invention." MPEP § 2107.01(I).

Additionally, the art recognizes no specific or substantial utility for the compound(s) of the invention. For example, Appella (D.H. Appella, et al. J. Am. Chem. Soc. (1999), 121, pages 7574-7581, PTO 1449, 1/20/04) states that, "Creation of new foldamers tests and refines our ability to understand how networks of noncovalent interactions promote adoption of specific shapes by flexible molecules. In addition to this fundamental motivation, foldamer research has

practical significance because oligomers with predictable conformations should provide new strategies for mimicry of biomolecular function." (page 7574). Appella (#2) (D.H. Appella, et al. J. Am. Chem. Soc. (1999) 121, pages 2309-2310) states that, "The high conformational stability of short oligomers of properly chosen β-amino acids in aqueous solution suggests that β-peptides will provide useful scaffolds for creation of biologically active molecules with predetermined shapes." "Biological applications of β-peptides should be facilitated by their resistance to protease degradation." (page 2310).

For these, and the reasons of record, the rejection of claims 4-6, 8 and 9 as lacking enablement under 35 USC § 101 is maintained.

The following is a quotation of the first paragraph of 35 U.S.C. 112:
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4-6, 8 and 9 stand rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

For these, and the reasons of record, the rejection of claims 4-6, 8 and 9 under 35 USC § 112, 1st paragraph, is maintained.

Applicant's arguments regarding the rejection of claims 4-6, 8 and 9 under 35 USC § 112, 1st paragraph, written description, have been considered but not found persuasive.

Applicant argues that the genus has written description, and that written description is fact-based inquiry and that the examples in the specification provide sufficient description.

With regards to the fact based inquiry, the Examiner had set forth a proper fact-based inquiry, as set forth below, addressing each of the 5 points in the 'test'. As detailed below, Applicant is specifically deficient in partial structure and functional characteristics, especially since the utility is only a general utility. Additionally, with regards to the examples providing "an exhaustively detailed discussion" of the chemistry to make the compounds claimed, the compounds made are not sufficiently varied in their structures, and the synthesis describes, in addition to making multimers, describes making the starting synthons. It is maintained that the variance in the genus is not adequately described by the examples, especially since the genus embraces any and all α-, β-, and γ- amino acids, and because α-amino acids are defined to include variants, derivatives, and analogs. The rejection is set forth below.

Claims 4-6, 8 and 9 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant admits the compounds have no biological function, and thus the rejection has been amended to reflect such admission.

The MPEP states that the purpose of the written description requirement is to ensure that the inventor had possession, as of the filing date of the application, of the specific subject matter later claimed by him. The courts have stated:

> "To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997); *In re Gostelli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) ("[T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by

> describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." *Lockwood*, 107 F.3d at 1572, 41 USPQ2d at 1966." *Regents of the University of California v. Eli Lilly & Co.*, 43 USPQ2d 1398.
>
> "[I]n *Amgen,* we held that such a product is not conceived until one can define it other than by its biological activity or function. The difficulty that would arise if we were to hold that a conception occurs when one has only the idea of a compound, defining it by its hoped-for function, is that would-be inventors would file patent applications before they had made their inventions and before they could describe them. That is not consistent with the statute or the policy behind the statute, which is to promote disclosure of inventions, not of research plans. While one does not need to have carried out one's invention before filing a patent application, one does need to be able to describe that invention with particularity." (*Fiers*, 984 F.2d at 1171, 25 USPQ2d 1601, 1605).

The MPEP lists factors that can be used to determine if sufficient evidence of possession has been furnished in the disclosure of the Application. These include "level of skill and knowledge in the art, partial structure, physical and/or chemical properties, functional characteristics alone or coupled with a known or disclosed correlation between structure and function, and the method of making the claimed invention. Disclosure of any combination of such identifying characteristics that distinguish the claimed invention from other materials and would lead one of skill in the art to the conclusion that the applicant was in possession of the claimed species is sufficient." MPEP § 2163.

The MPEP further states that for a generic claim the genus can be adequately described if the disclosure presents a sufficient number of representative species that encompass the genus. MPEP .§ 2163. If the genus has a substantial variance, the disclosure must describe a sufficient variety of species to reflect the variation within that genus. See MPEP § 2163. Although the MPEP does not define what constitute a sufficient number of representative species, the courts have indicated what do not constitute a representative number of species to adequately describe a broad generic. In *Gostelli*, the courts determined that the disclosure of two chemical compounds within a subgenus did not describe that subgenus. *In re Gostelli*, 872, F.2d at 1012, 10 USPQ2d at 1618.

The factors considered in the Written Description requirement are (1) *level of skill and knowledge in the art*, (2) *partial structure*, (3) *physical and/or chemical properties*, (4) *functional characteristics alone or coupled with a known or disclosed correlation between structure and function*, and the (5) *method of making the claimed invention.*

In the instant case, the claims are drawn to isolated, unnatural polypeptide compounds of the generic formula $A[X_aYZ_c]_dA$, wherein A is generally a protecting group, or unmodified

peptide terminus, X and Z are α-, β-, and/or γ- amino acid residues; a, c, and d are each > 0; with the provisos that a + c > 3 and the compound comprise at least 1 α-amino acid and 2 cyclically-constrained β-amino acids.

(1) Level of skill and knowledge in the art:

The level of skill in the peptide art is high, as is the knowledge of general peptide synthesis.

(2) Partial structure:

The claims provide a general teaching of partial structure, directed to the general class of components for the structure. The claims and specification are silent to the myriad of compounds embodied by the instant claims, providing only for closely related compounds in the specification.

(3) Physical and/or chemical properties and (4) Functional characteristics:

The compounds must meet requisite physical characteristics, with regards to the type of amino acids that minimally must be present.

The specification and art are silent to any functional characteristics the compounds must have, e.g., inhibitor of ATPase activity, Prolyl peptidase inhibitor, stem cell activator, etc. Applicant admits that the compounds are not biomolecules, and the specification provides only a general utility of being research tools.

(5) Method of making the claimed invention:

Methods of making peptides are well known in the art, and the specification provides synthesis of multimers in the examples.

As stated *supra*, the MPEP states that written description for a genus can be achieved by a representative number of species within a broad generic. It is unquestionable that the claims are broad generics, with respect to all possible compounds encompassed by the claims. The possible structural variations are limitless to any class of peptide, having a minimal number of cyclically-constrained β-amino acids. Further, the length of the peptidomimetic compound and the number of elements within the X and Z subunits are limitless. Moreover, the specification lack sufficient variety of species to reflect this variance in the genus, particularly given the definition of α-amino acids is, "any and all natural and unnatural α-amino acids [and] encompasses conventional and all well-known naturally occurring amino acids, as well as synthetic variations, derivatives, and analogs thereof", and the specification provides no definitions or examples of 'variations, derivatives and analogs'. While having written description of the closely related compounds identified in the specification tables and/or examples, the specification is absent a sufficient number of compounds to describe the entire genus.

The description requirement of the patent statue requires a description of an invention, not an indication of a result that one might achieve if one made that invention. See *In re Wilder*, 736, F.2d 1516, 1521, 222 USPQ 369, 372-73 (Fed. Cir. 1984) (affirming rejection because the specification does "little more than outlin[e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate.") Accordingly, it is deemed that the specification fails to provide adequate written description for the genus of the claims and does not reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the entire scope of the claimed invention.

For these, and the reasons of record, the rejection of claims 4-6, 8 and 9 under 35 USC § 112, 1st paragraph, written description, is maintained.

Applicant's arguments regarding the rejection of claim 4-6, 8 and 9 under 35 USC § 102(b) have been considered, but not found persusasive.

Applicant argues that Appella (D.H. Appella, et al. J. Med. Chem. (1999) 121, pages 2309-2310) does not teach α-amino acids in the peptide sequence, and thus does not anticipate the claims. Applicant admits that the examiner "accidentally inserted into [his] figure conventional α-Lys residues; while all of the structures shown in Appella et al. incorporate β-Lys residues." (page 30).

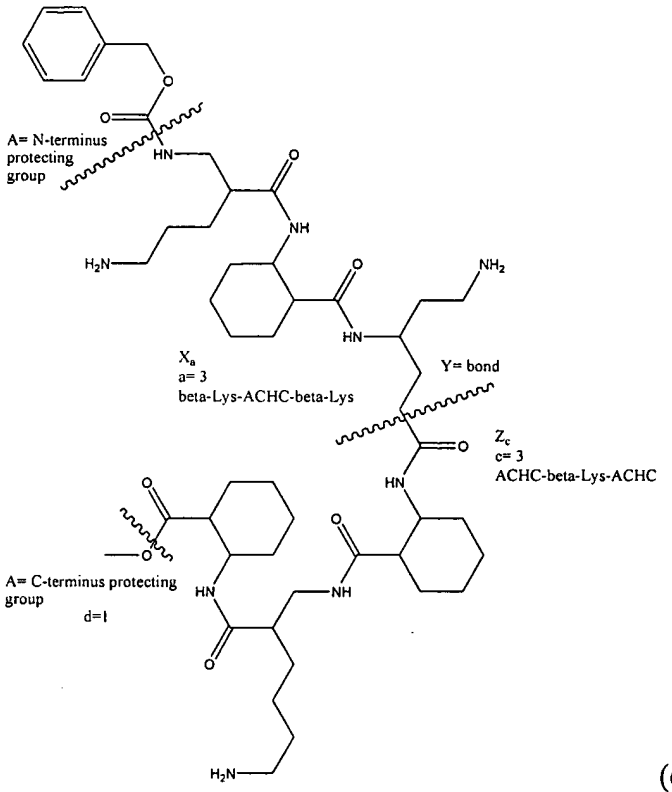
As stated *supra*, Applicant has defined α-amino acids to the non-limiting definition where it includes synthetic variants, derivatives, and analogs. β-Lys is therefore considered to be an analog of, derivative of, or synthetic variant of α-Lys, and the rejection is maintained, as set forth below..

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 4-6, 8 and 9 stand rejected under 35 U.S.C. 102(b) as being anticipated by APPELLA (D.H. Appella, et al. J. Med. Chem. (1999) 121, pages 2309-2310).

Appella, teaches the compound:



(compound #3, page 2309).

Applicant has defined α-amino acid to include the non-limiting terms derivative, analog, and synthetic variant, the examiner has concluded that this includes the β-Lys residue.

For these, and the reasons of record, the rejection of claims 4-6, 8 and 9 under 35 USC § 102(b) as being anticipated by Appella, is maintained.

Conclusion

NO CLAIMS ARE ALLOWED.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

This application contains claim 11 drawn to an invention nonelected with traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew D. Kosar whose telephone number is (571)272-0913. The examiner can normally be reached on Monday - Friday 8am-430pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell can be reached on (571)272-0974. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andrew D. Kosar, Ph.D.
Art Unit 1654

CHRISTOPHER R. TATE
PRIMARY EXAMINER